

REMARKS

This Amendment is responsive to the Office Action dated July 23, 2004. Applicant has amended claims 1, 11, 21, and 22 and added new claims 32-48. Accordingly, claims 1-48 are pending.

Information Disclosure Statement

As a preliminary matter, Applicant notes that the Examiner did not provide an initialed copy of the 1449 form accompanying Applicant's Information Disclosure Statement filed April 16, 2002. Applicant respectfully requests that the Examiner forward the initialed 1449 form with his next communication to indicate consideration of the cited references.

Claim Rejections Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1, 3, 7, 9, 11, 13, 17, 19, 21, 24, 28 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Hood, Jr. (U.S. 5,746,203) in view of Applicant's admitted prior art; rejected claims 2, 12, 22 and 23 under 35 U.S.C. § 103(a) as being unpatentable over Hood, Jr. in view of Applicant's admitted prior art, and further in view of Nitschke et al. (U.S. 6,463,555); rejected claims 4-6, 14-16 and 25-27 under 35 U.S.C. § 103(a) as being unpatentable over Hood, Jr. in view of Applicant's admitted prior art, and further in view of Sirazi et al. (U.S. 4,586,179); rejected claims 8, 18 and 29 under 35 U.S.C. § 103(a) as being unpatentable over Hood, Jr. in view of Applicant's admitted prior art, and further in view of official notice taken by the Examiner; and rejected claims 10, 20 and 31 under 35 U.S.C. § 103(a) as being unpatentable over Hood, Jr. in view of Applicant's admitted prior art, and further in view of Olson et al. (U.S. 5,919,212).

Applicant respectfully traverses the rejections to the extent they may be considered applicable to the claims as amended. The applied references fail to disclose or suggest the inventions defined by Applicant's amended claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

Contrary to the requirements of amended claims 21-35, the applied references fail to disclose or suggest a medical device comprising a watchdog timer hardware unit, a first functional module comprising a first embedded processor configured to generate a handshake

signal, and a second functional module comprising a second embedded processor with a watchdog timer software process corresponding to the watchdog timer hardware unit configured to receive the handshake signal and to reset the first embedded processor when the handshake signal is not provided within a prescribed time interval.

Similarly, with respect to amended claims 1-20 and 36-41, none of the applied references suggests, in a first processor of a first functional module of a medical device, generating a handshake signal, providing the handshake signal to a watchdog timer software process in a second processor of a second functional module of the medical device, wherein the watchdog timer software process corresponds to a watchdog timer hardware unit, receiving a reset signal from the second processor to reset the first processor when the handshake signal is not provided to the watchdog timer software process within a prescribed time interval.

Hood, Jr./ Admitted Prior Art

The Examiner stated that Hood, Jr. teaches a medical device (patient monitor 10) comprising a first functional module with a first embedded processor (CPU 12) configured to generate a handshake signal and a second functional module comprising a second embedded processor (failsafe processor 28) configured to receive the handshake signal and to power down the first embedded processor into a safe state when the handshake signal is not provided within a prescribed time interval. The Examiner recognized that Hood, Jr. fails to teach a second embedded processor configured to reset the first embedded processor.

However, the Examiner stated that Applicant's disclosure admits as prior art a medical device in which a watchdog timer resets a first embedded processor when a handshake signal is not detected within a prescribed time interval. On this basis, the Examiner concluded that one of ordinary skill in the art would have considered it obvious to modify the Hood, Jr. system to reset a process upon detection of an operating fault.

First, Applicant disputes the Examiner's contention that Applicant has admitted any body of art as constituting prior art. In providing a general background, Applicant did not identify any particular art as prior art, and did not intend to do so. However, this issue is generally immaterial to the ground of rejection, in light of the clear differences defined by the amended claims.

In contrast to Hood, Jr. or any prior art purportedly admitted by Applicants, the claimed invention requires a watchdog timer software process that corresponds to a watchdog timer hardware unit. The watchdog timer software process, running on a second processor of a second functional module, receives a handshake signal from a first processor running on a first functional module. If the handshake signal is not provided to the watchdog timer software process within a prescribed time interval, the first processor receives a reset signal.

As described in Applicant's disclosure, the use of a watchdog timer software process permits the functionality of a watchdog timer hardware unit to be extended and leveraged across other embedded processors. In this manner, there is no need to provide a dedicated watchdog timer hardware unit for every embedded processor within a set of functional modules. This feature may be particularly advantageous in a medical device that includes multiple modules dedicated to different functions.

Neither Hood, Jr., nor any prior art purportedly admitted by Applicant, provides a teaching that would have suggested the features set forth in Applicant's claims, or the advantages to be obtained from such a feature. In particular, Hood, Jr. describes neither a watchdog timer software process, as defined by the claims, nor any medical device in which a processor in one functional module resets a processor in another functional module.

Accordingly, modification of the Hood, Jr. device as proposed by the Examiner simply would not result in the invention defined by Applicant's amended claims. In particular, the resulting structure would not provide a watchdog timer software process in a second processor in a second functional module to receive a handshake signal from a first processor in a first functional module.

In view of the basic differences identified above, Hood, Jr. would not support a prima facie case of unpatentability with respect to Applicant's claims, whether taken alone or in combination with any admitted prior art. Claims 1, 11, and 21 are therefore allowable over the prior art. Claims 3, 7, and 9 are dependent from claim 1, claims 13, 17, and 19 are dependent from claim 11, and claims 24, 28, and 30 are dependent from claim 21. For at least the reasons described above, claims 3, 7, 9, 13, 17, 19, 24, 28, and 30 also are in condition for allowance.

Hood, Jr./ Admitted Prior Art/Nitschke et al.

The Examiner acknowledged that Hood, Jr. fails to teach a windowed watchdog timer, as recited in Applicant's claim 22, or the resetting of a processor when a handshake signal is provided before a minimum time or after a maximum time, as recited in Applicant's claim 2, 12 and 23. The Examiner cited Nitschke et al., however, as disclosing a windowed watchdog timing circuit. On this basis, the Examiner concluded that it would have been obvious to modify the Hood, Jr. device, as modified by purportedly admitted prior art, to include a windowed watchdog timer as disclosed by Nitschke et al., "in order to improve the system's reliability in detecting faults in a processor."

Notwithstanding the features of Hood, Jr. and Nitschke et al., as described by the Examiner, neither reference would have suggested the basic requirements of amended claim 1, 11, and 21, on which claims 2, 12, 22 and 23 are dependent. For example, Hood, Jr. and Nitschke et al. fail to disclose or suggest generation of a handshake signal in a first processor of a first functional module of a medical device, and resetting the first process when a watchdog timer software process in a second processor of a second functional module of the medical device when the handshake signal is not generated within a prescribed time interval. Accordingly, with no teaching of such a watchdog timer software process, the applied references likewise fail to suggest a watchdog timer software process that resets the first processor when the handshake signal is provided before a minimum time or after a maximum time, or corresponds to a windowed watchdog timer hardware unit.

In view of these differences, modification of the Hood, Jr. device, as modified by the purportedly admitted prior art, to include the functionality of the Nitschke et al. device would not result in the claimed invention. In particular, the resulting structure would not provide a watchdog timer software process in a second embedded processor, where the watchdog timer software process corresponds to a windowed watchdog timer. Accordingly, Nitschke et al. provides no additional teaching sufficient to overcome the basic deficiencies in Hood, Jr. Therefore, claims 2, 12, 22, and 23 are also in condition for allowance.

Hood, Jr./Applicant's Admitted Prior Art/Sirazi et al.

The Examiner recognized that Hood, Jr. fails to teach detection of a voltage or disablement of therapy output hardware as a function of the detected voltage, as set forth in claims 25-27. The Examiner cited Sirazi et al., however, as teaching a combination watchdog timer and input voltage level detector circuit coupled to a microprocessor. The Examiner further stated that Sirazi et al. discloses a voltage monitor configured to detect an abnormal power condition and to disable the microprocessor in response to the abnormal power condition.

On this basis, the Examiner concluded that it would have been obvious to modify the Hood, Jr. device, as modified according to purportedly admitted prior art, to include a voltage monitor as disclosed by Sirazi et al. in order "to prevent the therapy output hardware from functioning improperly and potentially harming a patient." In addition, the Examiner stated that it would have been equally obvious to configure the voltage monitor to selectively disable therapy output hardware as a function of a detected erroneous voltage.

However, neither Sirazi et al. nor Hood, Jr. provides teachings that would have suggested the basic requirements of Applicant's claims, i.e., generation of a handshake signal in a first processor of a first functional module of a medical device, and resetting the first process when a watchdog timer software process in a second processor of a second functional module of the medical device when the handshake signal is not generated within a prescribed time interval. Accordingly, with no teaching of such a watchdog timer software process, the applied references likewise fail to suggest such a method or device with the further addition of a voltage detection feature, as defined by claims 4-6, 14-16, and 25-27.

In view of these differences, modification of the Hood, Jr. device, as modified by Applicant's admitted prior art, to include the functionality of the Sirazi et al. device would not result in the claimed invention. In particular, the resulting structure would not provide a voltage monitor in the medical device that includes a watchdog timer software process in the second embedded processor corresponding to a watchdog timer.

In view of these differences, modification of the Hood, Jr. device, as modified by the purportedly admitted prior art, to include the functionality of the Sirazi et al. device would not result in the claimed invention. In particular, Sirazi et al. provides no additional teaching

sufficient to overcome the basic deficiencies in Hood, Jr. Therefore, claims 4-6, 14-16, and 25-27 are also in condition for allowance.

Hood, Jr./Applicant's Admitted Prior Art/Official Notice

The Examiner recognized that Hood, Jr. fails to teach that the user interface module is communicatively coupled to at least one of a keyboard, a display screen, and a strip recorder, as recited in Applicant's claim 29. The Examiner took official notice that it would have been well known in the art that a user interface module is necessarily coupled to a number of input/output devices for facilitating communication with an external operator. The Examiner asserted that input/output devices well known in the art include a keyboard, a display screen, and a strip chart recorder. On this basis, the Examiner concluded that it would have been obvious to modify the Hood, Jr. device, as modified by purportedly admitted prior art, to include the features taken as official notice "in order to facilitate communication between the user interface module and an external operator."

Although the Examiner's resort to official notice is suspect, it is generally immaterial for purposes of this response. Once again, neither Hood, Jr. nor any other prior art teaching, whether by official notice, admitted prior art, or otherwise, provides at teaching that would have suggested the basic requirements of Applicant's claims. In particular, none of the applied art provides any additional teaching sufficient to overcome the basic deficiencies in Hood, Jr. with respect to claims 1, 11 and 21. Therefore, claims 8, 18, and 29 are also in condition for allowance.

Hood, Jr./Applicant's Admitted Prior Art/Olson et al.

The Examiner admitted that Hood, Jr. in view of Applicant's admitted prior art fails to teach that the medical device is an automated external defibrillator (AED), as recited in Applicant's claim 31. The Examiner asserted that Olson et al. teaches an AED comprising a watchdog timer. On this basis, the Examiner concluded that it would have been obvious to modify the Hood, Jr. device, modified by Applicant's admitted prior art, to include the watchdog system of the AED disclosed by Olson et al., "to fulfill a recognized need in the art to prevent an AED from malfunctioning at a critical time." Olson et al. provides no additional teaching

sufficient to overcome the basic deficiencies in Hood, Jr. with respect to claims 1, 11 and 21. Therefore, claims 10, 20 and 31 are also in condition for allowance.

New Claims:

Applicant has added claims 32-48 to the pending application. The applied references fail to disclose or suggest the inventions defined by Applicant's new claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed inventions.

As one example, the prior art of record fails to disclose or suggest an external defibrillator comprising a therapy control module to control delivery of defibrillation shocks to a patient, the therapy control module including a first processor that generates a first handshake signal and a watchdog timer hardware unit that resets the first processor when the first handshake signal is not generated within a first time interval specified by the first watchdog timer hardware unit, and a system control module including a second processor to generate a second handshake signal, wherein the therapy control module includes a watchdog timer software process on the first processor to reset the first processor when the second handshake signal is not generated within the first time interval, as set forth in new claims 42-46.

Also, the art of record neither discloses nor suggests an external defibrillator comprising three or more functional hardware modules, at least one watchdog timer hardware unit, and a watchdog timer software process running on at least one of the modules to reset at least one of the other hardware modules when the respective hardware module fails to provide a handshake signal within a time interval specified by the watchdog timer hardware unit, as set forth in new claims 47 and 48.

CONCLUSION

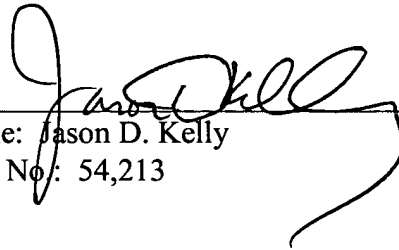
All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 50-1778. The Examiner is invited to telephone the below-signed attorney to discuss this application.

Date:

11/23/04

SHUMAKER & SIEFFERT, P.A.
8425 Seasons Parkway, Suite 105
St. Paul, Minnesota 55125
Telephone: 651.735.1100
Facsimile: 651.735.1102

By:



Name: Jason D. Kelly
Reg. No.: 54,213